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Collaborative Conservation of the Beach Clustervine

Coasts are areas of overlap—natural interfaces between the well-defined systems of land and sea. Although this mingling of terrestrial and marine habitats makes coastal zones difficult to categorize, it can also encourage a special brand of biological “collaboration.”

In a coastal zone, marine and terrestrial ecosystems interact constantly; they exchange nutrients, modify weather patterns, alter terrain, and support specialized flora and fauna. As with any collaboration, the interface that is a coastal system could not exist without the contributions of each participant.

Following nature’s example, Fairchild Tropical Garden initiated a collaborative effort in 2000 to restore the beach clustervine (*Jacquemontia reclinata*), an endangered plant in the morning glory family (Convolvulaceae), to the coastal dune system of southeastern Florida. This project brings together researchers, horticulturists, restoration ecologists, students, and land managers from different agencies and institutions, including Fairchild Tropical Garden; Broward, Miami-Dade, and Palm Beach counties; City of Boca Raton; and Florida International and Valdosta universities. The team is conducting the research necessary to make informed management decisions, and will work together to plan and construct a network for long-term management. The U.S. Fish and Wildlife Service, Fairchild Tropical Garden, Florida International University Tropical Biology Program, Florida Native Plant Society, and Garden Club of America/Center for Plant Conservation have provided funding.



South Florida’s coastal dunes and the beach clustervine

It is easy to see why the beauty of coastal areas in southern Florida—the rolling, white sands, bright wildflowers, waving grasses, and soothing ocean—have been attractive to so many people. But the popularity of this environment threatens its survival. Intense coastal development and recreational use have drastically reduced the extent of the once contiguous coastal dune ecosystem. Activities associated with human use and development (including beach renourishment, raking, pollution, and sand mining) have further degraded remnant habitats. Additionally, competition with nonnative, invasive species like Brazilian pepper (*Schinus terebinthifolius*) and Australian-pine (*Casuarina* spp.) threatens some native species. As these invasive species

encroach on native shoreline vegetation, they eliminate the open, sunny habitat patches that the beach clustervine and many other native coastal dune plant species require.

Subsequent to habitat loss and degradation, the beach clustervine, a terrestrial vine with small, white flowers and many spreading stems, suffered severe reductions in both numbers and distribution. It was placed on the federal endangered species list in 1993. Currently, about 800 individuals persist in nine sites spread over a 90-mile (144-kilometer) stretch of coastline. Extensive mapping and surveying efforts have revealed that most individuals are located in just two sites, making the beach clustervine especially vulnerable to catastrophic events such as hurricanes and intense fires.



Several of Florida's state-listed endangered species share coastal habitat with the beach clustervine. Populations of the beach peanut (*Okenia hypogonaea*), beach star (*Cyperus pedunculatus*), and wild-lime (*Zanthoxylum coriaceum*) are vulnerable to the same forces threatening the beach clustervine. Although the central goal of this collaboration is recovery of the clustervine, the team is also addressing general restoration and management of coastal dune habitat.

Recovery efforts

To examine several of the processes important for the maintenance of healthy beach clustervine habitat, the team is taking a multifaceted approach to research by:

- coordinating studies to describe associated vegetation, soil characteristics, sand accretion, and salt spray;
- evaluating the effect of foot traffic on the plant and its habitat;
- determining optimal methods and conditions for beach clustervine propagation and seed storage, and evaluating the most effective protocols for outplanting;

- studying the genetic structure of the remnant populations;
- identifying the most successful management techniques for maintaining genetic variation;
- identifying the plant's insect pollinators and determining their role in the plant's reproductive success;
- testing the influence of mycorrhizal fungi on beach clustervine growth and survival; and
- determining various aspects of the species' demography, including the population growth rate.

The team of collaborators gathers annually at planning meetings to exchange information and develop goals for the upcoming year. The meetings have created a forum for land managers and researchers to share knowledge and help direct each other's work. Land managers contribute information about specific opportunities and constraints for habitat management at each site, including the possibility of carrying out prescribed burns, the ability to remove invasive species, the availability of irrigation and other essential equipment, and the numbers of personnel available to implement future management plans. Land managers also provide information

Opposite page (from top): Planting beach clustervine at Bill Baggs Cape Florida State Recreation Area

Photo by Sam Wright

Beach clustervine in bloom

Photo by Hanna Thornton

At left (clockwise from upper left):

Typical beach clustervine dune habitat

Photo by Dena Garvue

There are many threats to clustervine habitat:

1) beach raking, which damages native coastal dune vegetation

Photo by Tony Pernas

2) Development threatens Florida coastal ecosystem

Photo by Sam Wright

3) Nonnative invasive Australian pine (*Casuarina equisetifolia*) displaces native coastal dune vegetation

Photo by Tony Pernas

about site history and current land use. This kind of information, in combination with research findings, is essential for effective management planning.

In our work to recover the beach clustervine, the project team members of Fairchild Tropical Garden, Florida International University, and city, county, and state land management agencies are occupying an area of overlap—the natural interface between the well-defined systems of biological research and natural resource management. Management goals based on research results alone, set with little consideration of actual resources, can be impossible to implement. Teamwork is essential to finding effective management strategies. As in any collaboration, the interface that is this project could not exist without the contributions of every partner.

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